Attachment 2 - Comparison of NLPA 631 and the KWA Standard

Regulatory Requirement	NLPA 631, Chapter B	KWA Recommended Practice
Code of practice is developed by a nationally recognized association or independent testing laboratory	NLPA 631, Chapter B, ***Future Internal Inspection Requirement for Lined Tanks***, copyright 1991, developed by the National Leak Prevention Association, date standard last revised, unknown (OUST received a version in early calendar year 1999 that was changed from the previous version, however, it had no revision number or date). - In the original EPA regulations, NLPA is a nationally recognized association.	***Recommended Practice for Inspecting Buried Lined Steel Tanks Using a Video Camera***, Dated September 28, 1999, First Edition, prepared by Ken Wilcox Associates, Inc. - Ken Wilcox Associates, Inc. is an independent testing laboratory
The tank is internally inspected	***visual inspection*** - for evidence of peeling, blistering, surface wrinkling or roughening of the lining material. Imperfections in the lining shall be repaired in accordance with the lining material manufacturers specifications.	***permanently recorded internal inspection with video camera*** - at least 98% of tank surface must be inspected to pass. - camera must be able to detect presence of problems at least as small as 3/32 inch at the maximum operating distance from the camera. - identify any evidence of separation, delamination, blistering, holidays, peeling, thin areas, surface wrinkling or roughing, cracking, pin holes, or other visible condition that indicates a problem. - any evidence of a perforation or any of the problems listed above, confirmed by the specialist fails the lining.

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The lined tank is structurally sound	***Ultrasonic thickness testing of the tank shell*** - Grid the tank into 3 ft. X 3 ft. sections and perform one ultrasonic thickness test at the center of each section. If a reading is obtained that is 75% or less of the original wall thickness, divide the 3 ft X 3 ft section into 9 subsections and take ultrasonic thickness readings of each of the 9 subsections. Average these 9 readings and record that value as the thickness reading for that section. Repairs can be made to the area if the average is less than 75% of original wall thickness. - Determine the average wall thickness of the tank. - If average wall thickness is less than 75%, then the tank fails. - If average wall thickness is 75% - 85%, cathodic protection must be added within 1 year of the inspection date. - If average wall thickness is >85%, then tank passes this part of inspection.	***A mathematical prediction model is used to statistically determine the expected leak free life of the tank*** - must yield years of leak-free life remaining and the probability of a potential leak of the tank in the specific soil condition found at the site. It shall be based on tank inspection data collected and shall include, at minimum, stray currents, soil resistivity, structure-to-soil potential, soil pH, electrical continuity/isolation, along with any other tests the specialist deems necessary. The mathematical formulation used in the prediction model must be based on accepted physical and electrochemical characteristics of the tank corrosion process. - The tank is considered structurally sound if all of the following are met: 1) the tank is not leaking. 2) results of the prediction model indicate that the age of the tank is less than the expected leak-free life. 3) the probability of a corrosion perforation is less than 0.05.

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The lining is performing according to original design specifications	***hardness testing*** - is required, but standard does not specify test location or number of tests required. - hardness must meet manufacturers specifications for product storage (The manufacturer's specifications are not stated in the standard. However, note that section A4.7.1 of NLPA 631 does state that for linings that have been successfully in service for 5 years in underground tanks, the manufacturer of the lining may document the compatibility of the lining to the product to which the lining has been exposed. Part of the inspection for compatibility is that the lining retains a minimum of 50% original cured hardness to meet compatibility requirements). ***thickness testing*** - is required, but standard does not specify test location or number of tests required. - lining thickness must be a nominal thickness of 125 mils with a minimum thickness of 100 mils. ***holiday testing*** (also referred to as an internal inspection tightness test in the standard) - conducted at a rate of 100 V/mil of nominal lining, but not less than 12,500 V and not more than 35,000 V. - any holidays detected must be repaired. - there can be no holidays detected in the lining on the final test.	***hardness testing*** - minimum of 5 readings below fill riser - 1 reading directly below opening, 4 readings at least 10 inches offset from the centerline, outside any influence of the striker plate. - minimum 50% original cured hardness needed to pass. ***thickness testing*** - minimum of 5 readings below fill riser - 1 reading directly below opening, 4 readings at least 10 inches offset from the centerline, outside any influence of the striker plate. - minimum 100 mil thickness needed to pass. ***tightness testing*** - 0.1 gph tank tightness testing. -failure of the tightness test requires human entry.

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Other requirements relating to the inspection of internally-lined tanks specified in the standard	- confined space entry certification and safety training of employees certification required. - inspection affidavit required.	- specialist must certify to tank owner/operator that personnel performing assessment work on the tank are knowledgeable of all applicable procedures in this practice and that all work was performed in strict accordance with this practice. - a preliminary site survey must be conducted - visual record and report must be submitted to the UST owner/operator. - independent third party evaluation required. - evaluation of video equipment. - comparison to manned entry inspection. - 50 consecutive tank inspections required where video and manned entry inspections are used.